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Case Report

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Tuberculosis with isolated atelectasis: a case report

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ABSTRACT

Tuberculosis is a significant health issue in developing countries, with the World Health Organization reporting over 10 million cases worldwide in 2014. While methods exist for rapid investigation of Mycobacterium tuberculosis, radiological imaging may lead to an earlier suspicion, such as presence of cavitation. In this case report, a patient with only radiological finding being atelectasis will be presented. An 18 years old female patient with no specific medical background history had been evaluated at an outpatient clinic with complaints of cough and exertional dyspnea. After a fluoroquinolone treatment for 7 days given for a pericardiac density in chest radiography, patient was admitted due to limited clinical response. A chest tomography was performed while the patient was under wide spectrum antibiotics and atelectasis in right lower lobe was observed. Repeated Acid-Fast Bacilli smears and sputum samples were found negative and bronchoscopy sampling did not show any findings of obstruction. Mycobacterium tuberculosis complex DNA was later detected in the lavage samples for which antituberculosis treatment was initiated with a regimen of isoniazid 5 mg/kg, pyrazinamide 25 mg/kg, ethambutol 15 mg/kg, and rifampin 10 mg/kg. The diagnosis of tuberculosis, in this case, was probably masked during the AFB smear testing due to a treatment regimen of fluoroquinolone. The general radiological definition of tuberculosis primarily consists of older studies, with the expected presentation being a combination of cavitation and infiltration. Normal lung imaging results had also been described for tuberculosis regarding chest radiography, and studies have reported the presence of atelectasis in patients with tuberculosis, as seen in tomography case series; however, the isolation of atelectasis had not been specified in the studies. Pulmonary tuberculosis may present itself with a myriad of radiological findings. This presentation often complicates the diagnostic process; however, differential diagnosis can be achieved via a combination of clinical symptoms and rapid culture sampling.

Keywords: Atelectasis, tuberculosis, fluoroquinolone

INTRODUCTION

Tuberculosis is a significant health issue in developing countries, with the World Health Organization (WHO) reporting over 10 million cases worldwide in 2014.[1] Although Mycobacterium tuberculosis presents itself as pulmonary tuberculosis in most cases, extrapulmonary manifestations are also common enough to warrant detailed investigation. Patients often suffer from nonspecific symptoms, with fever, coughing, and weight loss being the most prominent ones.[2]

For routine evaluation, patients with suspected tuberculosis undergo radiological imaging and tuberculosis culture, often taken from phlegm samples. While methods exist for rapid investigation of Mycobacterium tuberculosis in samples, radiological imaging with specific findings may lead to an earlier suspicion, such as presence of cavitation. The usually expected radiological findings include infiltration and cavitation, with fibrosis mostly seen in untreated cases, and localization of these findings is generally present in upper lobes.[3] In this case report, a patient with only radiological finding being atelectasis will be presented.

CASE

An 18 years old female patient with no specific medical background history had been evaluated at an outpatient clinic with complaints of cough and exertional dyspnea. The patient described that her symptoms worsened during a period of house-moving, in which she had relocated to a dormitory from her own house.

The initial physical examination revealed bronchial sounds at the right lower zone during auscultation, with the other examination finding and vitals being within normal ranges. The patient's posteroanterior chest radiography revealed right pericardiac density with a preference for the lower right zone of the lung (**Figure 1**). Due to physical inspection, radiological and clinical findings, treatment of fluoroquinolone for a duration of 7 days was initiated on an outpatient basis for the patient.

After three days, the patient had been reevaluated due to worsening symptoms, mainly no response of fever to the treatment, and urticarial rashes generalized to the whole body. Due to limited response to oral treatment, lack of control of symptoms, and adverse events of dermatologic findings, the patient was admitted to the ward for further

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investigation and treatment. The treatment had been halted for possible fluoroquinolone allergy, and piperacillin-tazobactam was initiated empirically, 3.5 gr thrice daily intravenously. Corticosteroid treatment was also started to control urticarial rashes with a dosage of 1 mg/kg orally per day, according to the dermatology consultation. An elevated C-reactive Protein (CRP) level of 39 mg/L with a normal range of white blood cell (WBC) count of 7.86*103 mcL was present in routine laboratory evaluation.

Figure 1. Initial evaluation chest radiograph

A thorax tomography was requested for the possibility of pulmonary sequestration, abscess, and other processes. Right lower lobe atelectasis was observed in the tomography, with no other specific radiological findings present (**Figure 2**). During the hospitalization period, no culture positivity in blood, urine, and sputum samples was seen, and six Acid-Fast Bacilli (AFB) smears from sputum samples were found negative for mycobacteria.

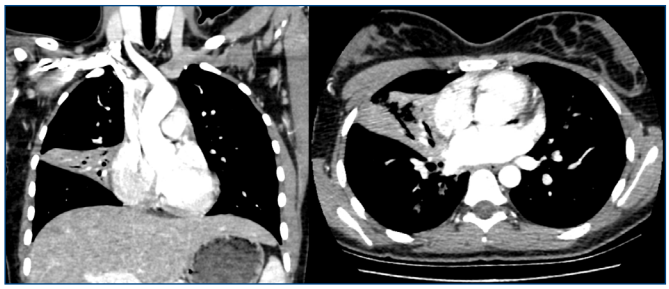

Figure 2. Hospital admission chest computed tomography

Bronchoscopy was planned for the patient to investigate resilient infectious sources further; however, due to hypertrophic conchae and edema, the intervention was then delayed until discharge. At bronchoscopy performed before discharge, the right bronchial tree starting from the main carina was observed to be covered with white secretion. The right middle lobe entrance was slightly narrowed, and lower lobe orifices were covered with the same secretion, albeit at a higher density. Bronchial lavage was performed at the lower lobe orifice level, and further sampling was performed with a protected catheter brush. Mycobacterium tuberculosis complex DNA was then detected in the lavage samples. After further investigation of family history, a case of tuberculosis was present in the patient's grandfather, for which the patient had stated infrequent visits.

With the bacteriologic findings confirming the clinical ones, the patient was diagnosed with pulmonary tuberculosis, and a treatment regimen of isoniazid 5 mg/kg, pyrazinamide 25 mg/kg, ethambutol 15 mg/kg, and rifampin 10mg/kg were initiated for two months. A treatment revision was planned if any resistance was observed in the culture results. The patient is currently on the first month of the treatment, with no side effects described, and clinical response was observed in the third week. A monthly evaluation for treatment response and side effect presence has been planned.

DISCUSSION

The diagnosis of tuberculosis, in this case, was probably masked during the AFB smear testing due to a treatment regimen of fluoroquinolone. Although a suitable treatment modality for typical and atypical pneumonia, fluoroquinolone initiation instead of a more limited regimen has grown significantly in our country, primarily due to the expectation of limited adherence of patients to dual regimens (such as amoxicillin and macrolide).

The general radiological definition of tuberculosis primarily consists of older studies, with the expected presentation being a combination of cavitation and infiltration, with hilar lymphadenopathy and pleural effusions defined as other relatively more frequently seen presentations that do not involve parenchyma.[4,5] Normal lung imaging results had also been described for tuberculosis regarding chest radiography, and studies have reported the presence of atelectasis in patients with tuberculosis, as seen in tomography case series; however, the isolation of atelectasis had not been specified in the studies.[6] While a combination of other findings with atelectasis is a possible result, to observe it as the first presentation does appear to be a rare entity.

CONCLUSION

As seen in this case, pulmonary tuberculosis may present itself with a myriad of radiological findings. This presentation often complicates the diagnostic process; however, differential diagnosis can be achieved via a combination of clinical symptoms and rapid culture sampling.

Patient Perspective

The patient shared that her initial assumption was that her diagnosis was asthma and did not expect the tuberculosis diagnosis. Coming from a family with many medical workers and doctors, such a diagnosis from a singular radiological finding was surprising to them. The patient described the diagnosis and treatment process as difficult but satisfactory.

ETHICAL DECLARATIONS

Informed Consent: All patients signed the free and informed consent form.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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